

In the Claims

Please cancel claim 1-6 without prejudice.

7. (previously amended) A method of determining the resonant frequencies of a cantilever comprising the steps of:

fixedly attaching a cantilever to a base, wherein a distal end of the cantilever remains free, and wherein the cantilever has a known spring constant κ ;

exciting the cantilever proximate the base, wherein the excitation occurs through a range of frequencies;

measuring any displacement in the distal end of the cantilever simultaneous to the step of exciting the cantilever;

detecting a plurality of resonance frequencies by comparing the measured displacement in the distal end of the cantilever to the excitation; and

determining a slope force separation curve, k , based upon the following equation:

$$\frac{1}{3} \frac{1 + \cos \xi \cdot \cosh \xi}{\sin \xi \cdot \cosh \xi - \cos \xi \cdot \sinh \xi} \xi^3 = \frac{k}{\kappa}$$

8. (original) The method of claim 7, wherein the step of exciting the cantilever comprises attaching a first piezo-electric crystal to the cantilever proximate the base and electrically exciting the first piezo-electric crystal.

9. (original) The method of claim 8, wherein the step of measuring any displacement in the distal end of the cantilever comprises attaching a second piezoelectric crystal to the distal end of the cantilever and measuring an electric signal generated by the second piezoelectric crystal.

10. (original) The method of claim 9, wherein the step of detecting the plurality of resonance frequencies comprises plotting the electrical excitation of the first piezoelectric crystal against the measured signal generated by the second piezoelectric crystal.

11. (previously cancelled)

12. (previously cancelled)

13. (original) The method of claim 9, wherein the step of attaching a second piezoelectric crystal to the distal end of the cantilever further comprises positioning a buffer between the cantilever and the piezoelectric crystal.

14. (previously cancelled)

15. (previously cancelled)

16. (previously cancelled)

17. (previously cancelled)

18. (previously cancelled)